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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/577,436

11/16/2006

Peter Geskes

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EXAMINER

FLANIGAN, ALLEN J

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

12/07/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/577,436	<b>Applicant(s)</b> GESKES ET AL.	
	<b>Examiner</b> Allen J. Flanigan	<b>Art Unit</b> 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 November 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 4-8, 16-18, 20, 22, 25-28, 31, 33-35, 38 and 47 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 9-15, 19, 21, 23, 24, 29, 30, 32, 36, 37, 39-46 and 48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 6) <input type="checkbox"/> Other: _____  |

Applicant's election of the species comprising the tube subspecies of Fig. 2a combined with the winglet subspecies of Fig. 5a and the arrangement pattern subspecies of Fig. 7a in the reply filed on 11/11/2010 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 4-8, 16-18, 20, 22, 25-28, 31, 33-35, 38, and 47 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/11/2010.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the rows having a varying distance *s* between them of claim 12, the projections having variable width of claim 14 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the

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remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claims 1-3, 9-15, 19, 21, 23, 24, 29, 30, 32, 36, 37, 39-46, and 48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Various claims of the above listed (claims 1, 3, 15, 29, etc.) employ the terms "in particular" and "preferably", which renders the claims indefinite, since it is not clear whether the recitation/limitation which follows "in particular" constitutes a further limitation of the claims or not. See MPEP 2173.05(c) and 2173.05(d).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

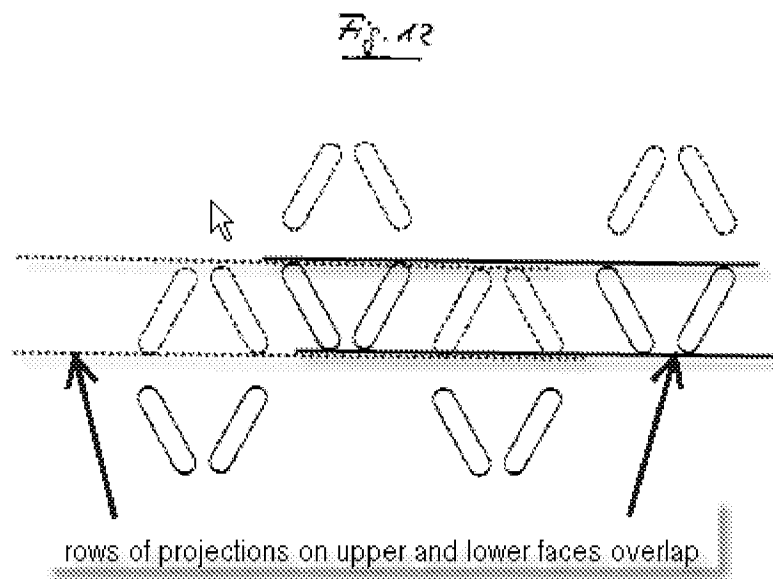
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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 19, 21, 23, 29, 30, 39, 40, 43, 44, 46, and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Pantow et al.

Pantow et al. show an embodiment (Fig. 12) that reads on the above claims, in that rows of mirror image flow disrupting projections are provided in oppositely facing walls of a flat heat exchange tube such that the rows overlap:



All of the remaining limitations of the above dependent claims are also found in Pantow et al. Regarding claim 44, virtually any fluid can potentially flow within and without the tubes of Pantow et al.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9-13, 15, 24, and 45 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Pantow et al.

Pantow et al. recognize that virtually all of the variables recited in the above claims (projection height, length, angle, spacing, etc.) are result effective variables; at least some of the claimed ranges of values for these parameters are overlapped by the ranges taught in Pantow et al. (such as the projection height/passage height ratio) or are clearly indicated in the drawings of Pantow et al. Thus, most of the above claims are either anticipated by, or *prima facie* obvious, over Pantow et al. See MPEP 2131.03, 2144.05 I. For those claimed parameters that are not disclosed specifically by Pantow et al. (for example row spacing), it would have been obvious to one of ordinary skill in the art to optimize such parameters as they are recognized in the art to be result-effective variables. See MPEP 2144.05 II.

Claims 36, 37, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pantow et al.

Regarding claims 36 and 37, as noted above, it would have been obvious to one of ordinary skill in the art to select optimum values for the specific claimed ranges of values of the above claims since projection height and flow passage width are both recognized as result-effective variables by Pantow et al.

Regarding claim 41, the Examiner takes Official Notice that soldering or welding are both notoriously well known means of assembling heat exchange tubes, and to use either method for forming the tubes of Pantow et al. would have been obvious. See *In re Malcolm et al.*, 54 U.S.P.Q. 235.

Claim 14 is rejected under 35 U.S.C. 102(b) as being anticipated by Rhodes.

Like Pantow et al., Rhodes discloses a heat exchange tube with projections provided in rows on opposed sidewalls of flat heat exchanger tubes that overlap in the flow direction inside the tube (see Fig. 5). Rhodes also shows that it is known to employ projections that have nonuniform width along their length (see Fig. 7D embodiment with triangular projections). Such projections formed in overlapping rows will anticipate claim 14.

Claim 42 is rejected under 35 U.S.C. 102(b) as being anticipated by Sacca.

Sacca shows stacked plates that form tubular flow passages having rows of projections that overlap in the direction of flow.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The remaining references of record show various heat exchanger tube designs employing flow deflecting projections in the internal walls.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen J. Flanigan whose telephone number is (571) 272-4910. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Allen J. Flanigan/  
Primary Examiner, Art Unit 3744